

## Two New Species of the Genus *Falcileptoneta* (Arachnida, Araneae, Leptonetidae) Collected from Chūbu District, Honshu, Japan

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**Abstract** Two new species of the genus *Falcileptoneta* Komatsu, 1970 are described mainly from Aichi Prefecture, Chūbu District, western Honshu, Japan, under the names, *F. ogatai* sp. nov. (type locality: Ishimaki-hagihira-chō, Toyohashi-shi, Aichi Pref.) and *F. aichiensis* sp. nov. (type locality: Sosaku-chō, Seto-shi, Aichi Pref.). Both the species are epigean spiders collected from under stones and among dead leaves in the forests and from an old mound.

**Key words:** Taxonomy, Araneae, Leptonetidae, *Falcileptoneta*, Japan, new species.

The spiders of the family Leptonetidae are frequently found in caves, abandoned mines and old mounds, and under stones in the forests. About forty species of two genera, *Falcileptoneta* Komatsu, 1970, and *Masirana* Komatsu, 1942, were hitherto known in southern Japan (Yaginuma, 1990; Irie and Ono, 2005). The family has not been found in Hokkaido (Matsuda, 2007).

Although the leptonetid spiders are found not only in natural and artificial caves but also under stones and dead leaves and in cracks of rocks on the forests' ground, those from the non-cave environments have not been well studied in Japan because of low frequency in discovering. Only a few species of epigean leptonetids were recorded in Japan, for instance, *Falcileptoneta japonica* (Simon, 1893), *Masirana abensis* (Kobayashi, 1973) and *M. silvicola* (Kobayashi, 1973). However, referring to our recent study (Irie and Ono, 2005, Irie, 2007) almost all of fifteen species of the family Leptonetidae recorded from Kyushu have been regarded as epigean and appearing to be trogophilous.

In the present paper, we describe further two species of epigean spiders of the genus *Falcileptoneta* on the basis of the specimens obtained mainly from Aichi Prefecture, Chūbu District, in western Honshu (also one specimen from neigh-

boring Mie Prefecture). The new species are separated from other congeners in Japan by the structure of male palp and female genitalia.

The abbreviations used in this paper are as follows: ALE, anterior lateral eye; AME, anterior median eye; PE, posterior eye; OA, ocular area; Cp, length of clypeus.

All the types and other specimens used for this study are deposited in the arachnid collection of the National Museum of Nature and Science, Tokyo (NSMT-Ar).

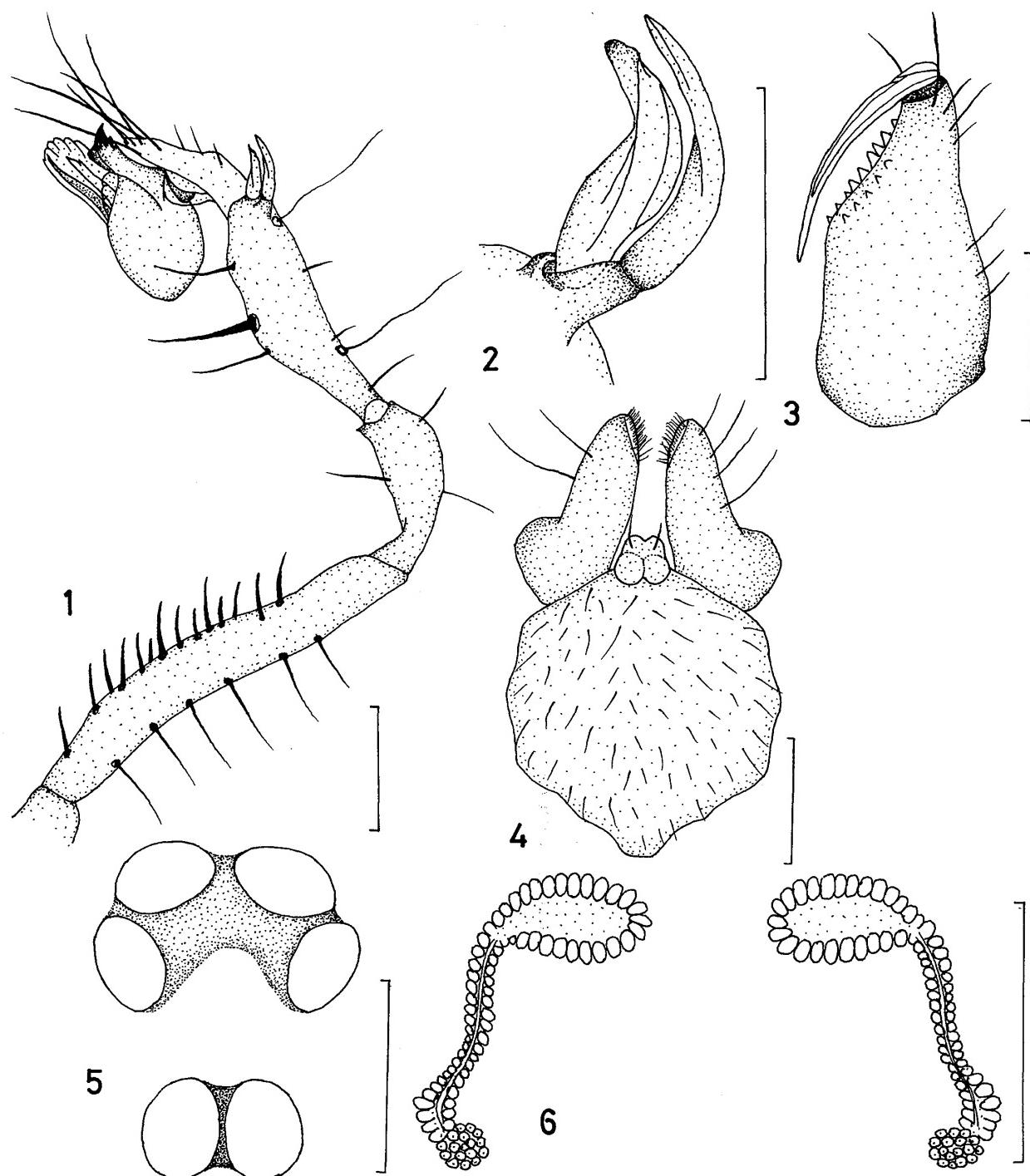
Before going further, we wish to express our sincere thanks to Mr. Kiyoto Ogata and Mr. Takahiro Mano, Aichi, for offering important specimens used in this paper. This study was supported in part by the Grant-in-aid No. 16540431 for Scientific Research by the Ministry of Education, Science, Sports and Culture, Japan.

### *Falcileptoneta ogatai* sp. nov.

[Japanese name: Ogata-mashiragumo]

(Figs. 1–6)

**Type specimens.** Holotype: ♂, Ishimaki-hagihira-chō, Toyohashi-shi, Aichi Pref., Chūbu District, western Honshu, Japan, 5-IV-1998, K. Ogata leg. (NSMT-Ar 7383); allotype: ♀, same data as for the holotype (NSMT-Ar 7384).



Figs. 1–6. *Falcileptoneta ogatai* sp. nov., 1–5, holotype ♂ (NSMT-Ar 7383), 6, allotype ♀ (NSMT-Ar 7384). — 1, Left male palp, retrolateral view; 2, tibial apophyses of male palp, retrolateral view; 3, left chelicera, ventral view; 4, maxillae, labium and sternum, ventral view; 5, ocular area, dorsal view; 6, internal structure of female genitalia, dorsal view. (Scales: 2,5,6, 0.1 mm; 1,3,4, 0.2 mm.)

*Other specimens examined.* 1♂, Hōrai-ji-san, Shinshiro-shi (formar Hōrai-chō), Aichi Pref., 15-I-1994 (NSMT-Ar 7386); 3♀1♂, same locality as for the holotype, 5-IX-1998 (NSMT-Ar 7385); 1♀2♂, Suse-chō, Toyohashi-shi, Aichi

Pref., 31-V-1998 (NSMT-Ar 7387); all collected by K. Ogata.

*Description.* Measurements (holotype ♂/allotype ♀; in mm): Body length 1.73/1.63, carapace length 0.70/0.70, width 0.60/0.60, abdomen

Table 1. Measurement of legs and palp of *Falcileptoneta ogatai* sp. nov. (♂ holotype/♀ allotype; in mm).

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	0.70/0.46	0.30/0.16	0.76/0.33	—	0.25/0.36	2.01/1.31
Leg I	1.30/1.33	0.23/0.23	1.43/1.40	1.03/1.06	0.66/0.70	4.65/4.72
Leg II	1.00/1.06	0.23/0.23	0.96/1.06	0.73/0.76	0.56/0.63	3.48/3.74
Leg III	0.80/0.90	0.20/0.23	0.76/0.73	0.70/0.70	0.50/0.46	2.96/3.02
Leg IV	1.16/1.23	0.23/0.23	1.20/1.23	0.90/0.96	0.60/0.56	4.09/4.21

length 1.03/0.93, width 0.60/0.70. Lengths of legs and palps are shown in Table 1. Eyes: AME 0.06/0.06, ALE 0.06/0.05, PE 0.05/0.05, distances between eyes: ALE-ALE 0.08/0.08, ALE-PE 0.03/0.03, OA length 0.16/0.17, width 0.13/0.13, Cp 0.08/0.10.

Male (holotype): Carapace light yellowish brown, hairless. Median furrow narrow and linear, and light brown. Cervical grooves and radial furrows evident and brown. AME>ALE=PE in size, major axes of ALEs convergent behind; PEs close to each other, their axes parallel (Fig. 5). Chelicera light yellowish brown, with nine teeth on promargin of fang furrow, also five teeth on retromargin (Fig. 3). Maxillae dark yellowish brown, narrowing at anterior part; labium dark yellowish brown, almost as long as wide, sternum dark yellowish brown, shield-shaped and almost as long as wide (Fig. 4). Legs yellowish brown; leg formura 1,4,2,3. Abdomen haired, yellowish gray, oval in shape and longer than wide.

Male palp (Figs. 1–2): Femur>tarsus>tibia>patella in length. Femur furnished with many spines on ventral part. Tibia with ventral spine 0.12 mm long, two long trichobothria on dorsal surface and two apophyses on apical part; main apophysis banana-shape and smaller one flower-bud-shape (Fig. 2). Projections and embolus of bulb are as shown in Fig. 1.

Female (allotype): Similar to male in coloration and general features. Body slightly shorter than that of male holotype. Palp longer than carapace, femur>tarsus>tibia>patella in length, apical end of patella with dorsal spine 0.22 mm long. Internal genitaia: with spermathecae as shown in Fig. 6.

*Distribution.* Japan, Honshu (Aichi Prefecture).

*Etymology.* The new species is dedicated to Mr. Kiyoto Ogata.

*Remarks.* This species is closely related to *Falcileptoneta speciosa* (Komatsu, 1957) (Komatsu, 1961) from Kaza-ana Cave, Suwa-shi, Nagano Pref., and *F. inabaensis* (Nishikawa, 1982) from a green tuff mines, Oyabe-shi, Toyama Pref., in the structure of male palpal organ, but can be distinguished from these two known species by the shape of the projections of bulb and the shape of tibial apophysis of male palp. *Falcileptoneta okinawaensis* Komatsu, 1972, from Shimuku-ana Cave, Tomitan-son, Okinawa Island has also two large apophyses in the distal part of palpal tibia, and could be in a same subgroup with the above three species. This new species was collected from under stones and among dead leaves in forest areas, and is regarded as an epigean spider.

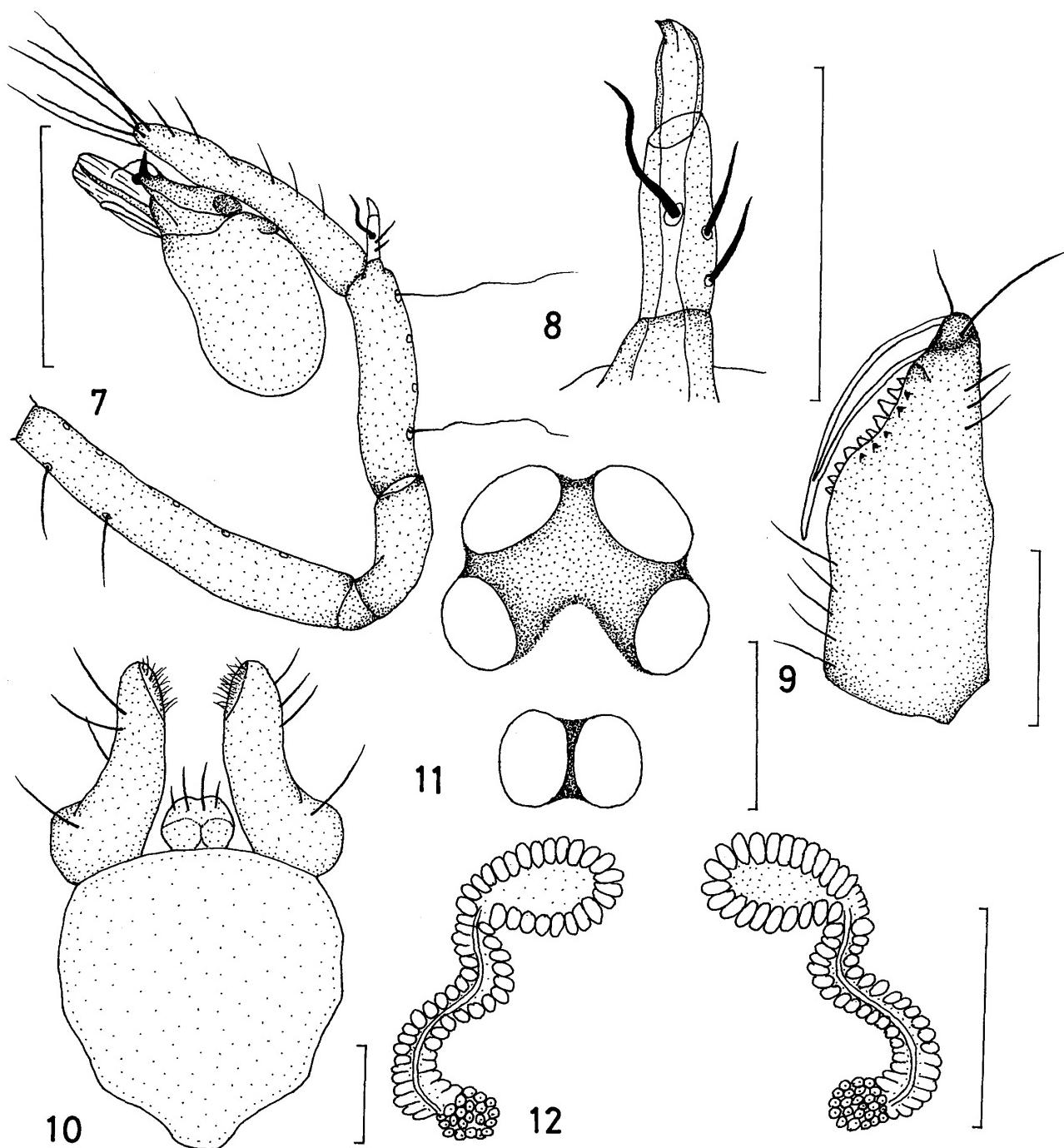
#### *Falcileptoneta aichiensis* sp. nov.

[Japanese name: Aichi-mashiragumo]

(Figs. 7–12)

*Type specimens.* Holotype: ♂, Sôsaku-chô, Seto-shi, Aichi Pref., Chûbu District, western Honshu, Japan, 13-X-1991, K. Ogata leg. (NSMT-Ar 7388); allotype: ♀, same locality as for the holotype, 20-III-1992, K. Ogata leg. (NSMT-Ar 7389).

*Other specimens examined.* 1 ♀, same locality as for the holotype, 14-V-1991, K. Ogata leg. (NSMT-Ar 7395); 1 ♂, Shironokami, Inabu-chô, Higashikamo-gun, Aichi Pref., 5-XII-1993, K. Ogata leg. (NSMT-Ar 7392); 1 ♀, Mt. Sanage-



Figs. 7-12. *Falcileptoneta aichiensis* sp. nov., 7-11, holotype ♂ (NSMT-Ar 7388), 12, allotype ♀ (NSMT-Ar 7389). —7, Left male palp, retrolateral view; 8, tibial apophyses of male palp, retrolateral view; 9, left chelicera, ventral view; 10, maxillae, labium and sternum, ventral view; 11, ocular area, dorsal view; 12, internal structure of female genitalia, dorsal view. (Scales: 8,11,12, 0.1 mm; 7,9,10, 0.2 mm.)

yama, Sanage-chō, Toyota-shi, Aichi Pref., 1-XI-1987, K. Ogata leg. (NSMT-Ar 7390); 1♂, same locality, 17-X-2002, T. Mano leg. (NSMT-Ar 7393); 1♂, Tennōzan-mound, Heiwa-chō, Toyota-shi, Aichi Pref., 15-VII-2003, T. Mano leg. (NSMT-Ar 7394); 1♂, Kiraramine, Komono-chō,

Mie-gun, Mie Pref., 24-VI-1990, K. Ogata leg. (NSMT-Ar 7391).

*Description.* Measurements (holotype ♂/allotype ♀; in mm): Body length 1.76/1.69, carapace length 0.76/0.73, width 0.56/0.63, abdomen length 1.00/0.96, width 0.56/0.80. Lengths of

Table 2. Measurements of legs and palp of *Falcileptoneta aichiensis* sp. nov. (♂ holotype/♀ allotype; in mm).

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	0.53/0.56	0.16/0.13	0.26/0.30	—	0.33/0.40	1.28/1.39
Leg I	1.66/1.13	0.30/0.26	2.03/1.53	1.10/1.13	0.96/0.66	6.05/4.71
Leg II	1.36/1.03	0.26/0.26	1.30/1.10	1.00/0.70	0.73/0.66	4.65/3.75
Leg III	1.06/0.83	0.23/0.23	1.10/0.83	0.90/0.73	0.63/0.60	3.92/3.22
Leg IV	1.43/1.26	0.26/0.26	1.66/1.30	1.20/0.96	0.80/0.66	5.35/4.44

legs and palps are as shown in Table 2. Eyes: AME 0.06/0.08, ALE 0.06/0.08, PE 0.06/0.08, distances between eyes: ALE-ALE 0.06/0.07, ALE-PE 0.02/0.02, OA length 0.20/0.20, width 0.16/0.20, Cp 0.12/0.13.

**Male (holotype):** Carapace yellowish brown, hairs absent. Median furrow narrow and linear, and dark yellowish brown. Cervical grooves and radial furrows evident, dark yellowish brown. All eyes nearly same in size; major axes of ALEs convergent behind; PEs also touching each other, their axes parallel (Fig. 11). Chelicera light brown, with ten teeth on promargin of fang furrow and five teeth on retromargin (Fig. 9). Maxillae dark yellowish brown, parallel at anterior part, labium dark yellowish brown, almost as long as wide, sternum yellowish brown, shield-shaped and almost as long as wide (Fig. 10). Abdomen haired, light gray with oval spots in light yellowish gray in the posterior part, oval in shape and longer than wide.

**Male palp (Figs. 7–8):** Femur>tarsus>tibia>patella in length. Tibia with two long trichobothria on dorsal surface and rostriform apophysis apically. The apophysis on large basal protuberance and furnished with strong, curved spine at middle and two additional strong hairs proximally (Fig. 8). The projections and embolus of bulb are as shown in Fig. 7.

**Distribution.** Japan, Honshu (Aichi and Mie Prefectures).

**Etymology.** The specific name is derived from the name of prefecture.

**Remarks.** *Falcileptoneta aichiensis* can be readily distinguished from *Falcileptoneta striata* (Oi, 1952) widely distributed in Honshu (Irie, 2007) by the presence of the tibial apophysis of

male palp. This new species is rather resembles *F. melanocomata* (Komatsu, 1961) described from Ryūga-dō Cave, Kami-shi, Kochi Pref., *F. caeca* Yaginuma, 1972, from caves and mines around Mt. Fuji, Shizuoka Pref., and *F. gotoensis* Irie et Ono, 2005, from Gotō Islands, Nagasaki Pref., in the shape of the tibial apophysis of male palp, which appears like a single tooth, a hook or a strong spine. However, the apophysis of this new species is peculiar and is furnished with a distinct spine at the middle and two additional strong hairs as a secondary process. This new species was collected from under stones and from an old mound, and is regarded as an epigean spider.

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